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Viscosity and structure configuration properties of equilibrium and supercooled liquid cobalt

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Abstract

© 2018, © 2018 Informa UK Limited, trading as Taylor & Francis Group. The shear viscosity of liquid cobalt at the pressure p = 1.5 bar and at the temperatures corresponding to equilibrium liquid and supercooled liquid states is measured experimentally and evaluated by means of molecular dynamics simulations. Further, the shear viscosity is also calculated within the microscopic theoretical model. Comparison of our experimental, simulation and theoretical results with other available data allows one to examine the issue about the correct temperature dependence of the shear viscosity of liquid cobalt. A strong correlation between the viscosity and the configuration entropy of liquid cobalt over the considered temperature range is found, which can be taken into account by the Rosenfeld's model.

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Keywords

entropy, Liquid cobalt, molecular dynamics, scaling law, viscosity

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